A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H01Q1/24 H01Q9/04

H04M1/02

H04B1/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

 $\begin{array}{ll} \mbox{Minimum documentation searched (classification system followed by classification symbols)} \\ \mbox{IPC 7} & \mbox{H01Q} & \mbox{H04M} & \mbox{H04B} \\ \end{array}$

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUM	ENTS CONSIDERED TO BE RELEVANT			
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to daim No.		
A .	US 6 272 356 B1 (DOLMAN RODNEY A ET AL) 7 August 2001 (2001-08-07) column 5, line 24 - column 6, line 3; figure 3	1,13		
А	EP 1 329 981 A (SAMSUNG ELECTRONICS CO LTD) 23 July 2003 (2003-07-23) paragraphs '0016! - '0027!; figures 3-5	1,13		
A	US 5 561 437 A (KRENZ ERIC L ET AL) 1 October 1996 (1996-10-01) abstract; figure 1	1,13		
A	EP 1 107 352 A (NOKIA MOBILE PHONES LTD) 13 June 2001 (2001-06-13) paragraphs '0011! - '0017!; figure 1	1,13		

Further documents are listed in the continuation of box C.	Patent family members are listed in annex.
Special categories of cited documents: A* document defining the general state of the art which is not considered to be of particular relevance E* earlier document but published on or after the international filing date L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) O* document referring to an oral disclosure, use, exhibition or other means P* document published prior to the international filing date but later than the priority date claimed	 *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family
Date of the actual completion of the international search 1 October 2004	Date of mailing of the international search report $11/10/2004$
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Van Dooren, G



Intermional Application No
PCT/EP2004/009030

	tion) DOCUMENTS CONSIDERED TO BE RELEVANT	Data and the Ma		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
Α	WO 93/18591 A (MOTOROLA INC) 16 September 1993 (1993-09-16) page 3, line 14 - page 4, line 23; figure 1	1,13		
٠				

INTERNATIONAL SEARCH REPORT

information on patent family members

Interplonal Application No PCT/EP2004/009030

	atent document I in search report		Publication date		Patent family member(s)	Publication date
US	6272356	B1	07-08-2001	NONE		,
ΕP	1329981	Α	23-07-2003	KR	2003062624 A	28-07-2003
				CN	1433103 A	30-07-2003
				EP	1329981 A2	23-07-2003
				US	2003137468 A1	24-07-2003
US	5561437	Α	01-10-1996	BR	9504663 A	08-10-1996
				CA	2156353 A1	16-03-1996
				CN	1130854 A ,B	
				DE	19532127 A1	28-03-1996
				FR	2724771 A1	22-03-1996
				GB	2293275 A ,B	20-03-1996
				JP	8097622 A ´	12-04-1996
				KR	184927 B1	15-05-1999
				SG	32495 A1	13-08-1996
EP	1107352	Α	13-06-2001	FI	992611 A	04-06-2001
				EP	1107352 A2	13-06-2001
				US	2001002825 A1	07-06-2001
WO	9318591	Α	16-09-1993	WO	9318591 A1	16-09-1993